

Exhibit A



THE UNIVERSITY OF KANSAS HEALTH SYSTEM

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Dr. Stephen Thornton, M.D. Summary and Expert Opinion

In Regards to Robert Steven Cutler, et al. v. Sheriff Mark Napier, et al.

I, Stephen Thornton, MD, have been asked to render an opinion regarding the matter of Robert Steven Cutler, et al. v. Sheriff Mark Napier, et al.

By way of background, I am board certified in both emergency medicine and medical toxicology. I have had an active clinical practice in emergency medicine since 2005 and in medical toxicology since 2012. My current clinical practice in emergency medicine is at the University of Kansas Hospital in Kansas City, KS. I am an associate professor of emergency medicine and a core faculty member for the University of Kansas Emergency Medicine Residency. In addition, I am a fee basis emergency medicine physician at the Kansas City VA Hospital in Kansas City, MO. I have also worked in the emergency departments of three other

large academic medical centers (the University of California – San Francisco – Fresno, Truman Medical Center, Kansas City, MO, and the University of California – San Diego). In my role as a emergency medicine physician I frequently care for patients with delirium from multiple causes. I use ketamine in my clinical practice and have published on the topic in the medical literature. During my career I have cared for patients suffering from environmental emergencies such as heat stroke. I also sit on a physician advisory board for a large emergency medical service that is tasked with reviewing and approving protocols including those on the management of excited delirium.

My active clinical practice in medical toxicology at both the University of Kansas Hospital in Kansas City, KS and the Children's Mercy Hospital in Kansas City, MO. I see patients at the bedside at both facilities who have delirium from multiple causes. I am also the medical director of the University of Kansas Health System Poison Control Center and care for multiple poisoned patients, including many with delirium, via the phone. My primary area of focus in medical toxicology is on the use and effects of novel psychoactive substances including hallucinogens and I have multiple abstracts and publications in this area. In addition, I have cared for multiple patients who have used lysergic acid diethylamide (LSD) and similar substances both in at the bedside and via the poison control center.

Please, find below are my manuscript and chapter publications for the last ten years:

1. Thornton S. Mercury. *Call Us. The Official Newsletter of the California Poison Control System* 2011; 9(1).
2. Thornton S, Gutovitz S. Intravenous overdose of insulin glargine without prolonged hypoglycemic effects. *J Emerg Med.* 2012 Sep;43(3):435-7
3. Ly BT, Thornton SL, Buono C, Stone JA, Wu AH. False-positive urine phencyclidine immunoassay screen result caused by interference by tramadol and

its metabolites. *Ann Emerg Med*. 2012 Jun;59(6):545-7.

4. Abdelmalek J, Thornton S, Nizar J, Schneir A, Sanchez AP. Successful use of continuous renal replacement therapy after hydroxocobalamin administration. *Dial Transplant*. 2011; 40: 415–17.
5. Thornton S. "Bath Salts"-Synthetic Cathinones. *Call Us....The Official Newsletter of the California Poison Control System* 2011; 9(4).
6. Thornton SL, Minns AB. Unintentional chronic acetaminophen poisoning during pregnancy resulting in liver transplantation. *J Med Toxicol*. 2012 Jun;8(2):176-8.
7. Thornton SL, Gerona RR, Tomaszewski CA. Psychosis from a Bath Salt Product Containing Flephedrone and MDPV with Serum, Urine, and Product Quantification. *J Med Toxicol*. 2012 Sep;8(3):310-3.
8. Thornton SL, Nguyen KT, Shenn SK, Castillo EM, Clark RF, Cantrell FL. A retrospective review of early gastrointestinal symptoms in the prediction of crotaline envenomation severity. *Wilderness Environ Med*. 2012 Dec;23(4):360-2.
9. Thornton S. Heavy metal poisoning should be recognized as a cause of hypertension in children. *Am Fam Physician*. 2012 Sep 1;86(5):394.
10. Thornton SL, Lo J, Clark RF, Wu AH, Gerona RR. Simultaneous detection of multiple designer drugs in serum, urine, and CSF in a patient with prolonged psychosis. *Clin Toxicol (Phila)*. 2012 Dec;50(10):1165-8.
11. Darracq MA, Thornton SL, Do HM, Bok D, Clark RF, Cantrell FL. Utilization of Hyperinsulinemia Euglycemia and Intravenous Fat Emulsion Following Poison Center Recommendations. *J Med Toxicol*. 2013 Sep;9(3):226-30.
12. Thornton SL, Wood C, Friesen MW, Gerona RR. Synthetic cannabinoid use associated with acute kidney injury. *Clin Toxicol (Phila)*. 2013 Mar;51(3):189-90.
13. Centers for Disease Control and Prevention (CDC). Acute kidney injury associated with synthetic cannabinoid use--multiple states, 2012. *MMWR Morb Mortal Wkly Rep*. 2013

Feb 15;62(6):93-8.

14. Thornton SL, Negus E, Carstairs SD. Pediatric zolpidem ingestion demonstrating zero-order kinetics treated with flumazenil. *Pediatr Emerg Care*. 2013 Nov;29(11):1204-6.
15. Thornton SL, Oller L, Sawyer T. Fatal Intravenous Injection of Electronic Nicotine Delivery System Refilling Solution. *J Med Toxicol*. 2014 Jun;10(2):202-4.
16. Thornton SL, Darracq M, Lo J, Cantrell FL. Castor bean seed ingestions: a state-wide poison control system's experience. *Clin Toxicol (Phila)*. 2014 Apr;52(4):265-8.
17. Garg U, Thornton S. NBOMe Drugs: Use of Dangerous New Hallucinogens Grows Despite Risks of Toxicity. *Clinical & Forensic Toxicology News*. 2014 June:: 1-5.
18. Schneir A, Ly BT, Casagrande K, Darracq M, Offerman SR, Thornton S, Smollin C, Vohra R, Rangun C, Tomaszewski C, Gerona RR. Comprehensive analysis of "bath salts" purchased from California stores and the internet. *Clin Toxicol (Phila)*. 2014 Aug;52 (7):651-8.
19. Thornton SL, Clark RF. Encephalopathy from unintentional donepezil and memantine ingestion. *Pediatr Emerg Care*. 2014 Sep;30(9):649-50.
20. Abdelmalek D, Arroyo-Plasencia A, Schwarz ES, Weber J, Sampson CS, Thornton SL, Mullins ME. Factitious snake envenomation and narcotic-seeking behavior. *Am J Emerg Med*. 2015 Mar 14. pii: S0735-6757(15)00164-3.
21. Darracq MA, Cantrell FL, Klauk B, Thornton SL. A chance to cut is not always a chance to cure- fasciotomy in the treatment of rattlesnake envenomation: A retrospective poison center study. *Toxicon*. 2015 Jul;101:23-6.
22. Abraham M, Tilzer L, Hoehn KS, Thornton SL. Therapeutic Plasma Exchange for Refractory Hemolysis After Brown Recluse Spider (*Loxosceles reclusa*) Envenomation. *J Med Toxicol*. 2015 Sep;11(3):364-7.
23. Albadareen R, Thornton S, Heshmati A, Gerona R, Lowry J. Unusually Prolonged Presentation of Designer Drug Encephalopathy Responsive to Steroids. *Pediatrics*. 2015

Jul;136(1):e246-8.

24. Thornton SL, Akpunonu P, Glauner K, Hoehn KS, Gerona R. Unintentional Pediatric Exposure to a Synthetic Cannabinoid (AB-PINACA) Resulting in Coma and Intubation. *Ann Emerg Med.* 2015 Sep;66(3):343-4.
25. Thornton SL, Farnaes L, Minns A. Prolonged Antimuscarinic Delirium in a Child Due to Benztropine Exposure Treated With Multiple Doses of Physostigmine. *Pediatr Emerg Care.* 2016 Apr;32(4):243-5
26. Thornton SL, Hunter J, Scott M. Fatal Tension Pneumoperitoneum Due to Non-Accidental Trauma. *West J Emerg Med.* 2015 Sep;16(5):788-9.
27. Thornton SL, Pchelnikova JL, Cantrell FL. Characteristics of Pediatric Exposures to Antidementia Drugs Reported to a Poison Control System. *J Pediatr.* 2016 May;172:147-50..
28. Thornton SL, Liu J, Soleymani K, Romasco RL, Farid H, Clark RF, Cantrell FL. Review of Experience of a Statewide Poison Control Center With Pediatric Exposures to Oral Antineoplastic Drugs in the Nonmedical Setting. *Am J Ther.* 2016 Mar-Apr;23(2):e377-81
29. Gallagher R, Dangers J, Thornton SL. Do trauma patients with phencyclidine-positive urine drug screens have increased morbidity or mortality? *Am J Emerg Med.* 2016 Jun; 34 (6):1066-8.
30. Darracq MA, Thornton SL, Minns AB, Gerona RR. A Case of 3,4-Dimethoxyamphetamine (3,4-DMA) and 3,4 Methylenedioxymethamphetamine (MDMA) Toxicity with Possible Metabolic Interaction. *J Psychoactive Drugs.* 2016 Sep 16:1-4.
31. Thornton SL, Hoehn S, Gerona RR. Seizures, Systemic Inflammatory Response, and Rhabdomyolysis Associated With Laboratory-Confirmed 2C-I and 25-I Exposure. *Pediatr Emerg Care.* 2018 Oct;34(10):e181-e183.
32. Christian MR, Lowry JA, Algren DA, Thornton SL, Deng S, Garg U. Do rapid comprehensive urine drug screens change clinical management in children? *Clin Toxicol*

- (Phila). 2017 Nov;55(9):977-980.
33. Thornton S, Lisbon D, Lin T, Gerona R. Beyond Ketamine and Phencyclidine: Analytically Confirmed Use of Multiple Novel Arylcyclohexylamines. *J Psychoactive Drugs*. 2017 Sep-Oct;49(4):289-293.
34. Garg, U., Johnson, L., Wiebold, A., Ferguson, A., Frazee, C., Thornton, S. False-Positive Carbamazepine Results by Gas Chromatography–Mass Spectrometry and VITROS 5600 Following a Massive Oxcarbazepine Ingestion. *The Journal of Applied Laboratory Medicine* Jan 2018.
35. Darracq MA, Armenian P, Comes J, Thornton S. Medical toxicology education in US emergency medicine residencies. *Am J Emerg Med*. 2018 Oct;36(10):1919-1921.
36. Thornton SL, Oller L, Coons DK. 2016 Annual Report of the University of Kansas Health System Poison Control Center. *Kans J Med*. 2018 May; 11(2):23-33.
37. Marshall K, Thornton SL. Worse than the Disease? The Rash of Lomatium Dissectum. *Kan J Med*. 2018 May; 11(2): 54-55.
38. Tung RC, Thornton SL. Characteristics of Laboratory Confirmed Ethylene Glycol and Methanol Exposures Reported to a Regional Poison Control Center. *Kans J Med*. 30;11(3):67-69.
39. Bowman CF, Pruitt B, Marx J, Thornton SL. Massive Iatrogenic Pediatric Ketamine Overdose With Serial Levels and Minimal Morbidity. *Pediatr Emerg Care*. 2019 Feb 25 [ePub].
40. Oller LK, Coons DM, Thornton SL. 2017 Annual Report of the University of Kansas Health System Poison Control Center. *Kans J Med*. 2019 Aug 21;12(3):70-79.
41. Thornton SL, Darracq MA. Patch Problems? Characteristics of Transdermal Drug Delivery System Exposures Reported to the National Poison Data System. *J Med Toxicol*. 2019 Aug 13.
42. Thornton SL. Cyproheptadine. Toxicology Recall, 1st Ed; Lippincott Williams & Wilkins,

2009.

43. Thornton SL. Physostigmine and Neostigmine. Toxicology Recall, 1st Ed; Lippincott Williams & Wilkins, 2009.
44. Thornton SL. Marine Envenomation. Toxicology Recall, 1st Ed; Lippincott Williams & Wilkins, 2009.
45. Thornton SL. Bromides. Toxicology Recall, 1st Ed; Lippincott Williams & Wilkins, 2009.
46. Thornton SL. Bromates. Toxicology Recall, 1st Ed; Lippincott Williams & Wilkins, 2009.
47. Thornton SL. Hydrogen Sulfide. Toxicology Recall, 1st Ed; Lippincott Williams & Wilkins, 2009.
48. Thornton SL. Isopropanol. Toxicology Recall, 1st Ed; Lippincott Williams & Wilkins, 2009.
49. Thornton SL. Antidiarrheal. Toxicology Recall, 1st Ed; Lippincott Williams & Wilkins, 2009.
50. Thornton SL. Antiemetics. Toxicology Recall, 1st Ed; Lippincott Williams & Wilkins, 2009.
51. Thornton SL. eMedicine: Pediatrics, Urinary Tract Infections and Pyelonephritis. 2008-2012.
52. Thornton SL. Flail Chest. Rosen and Barkin's 5-Minute Emergency Medicine Consult; 4th Ed. Lippincott Williams & Wilkins, 2010.
53. Thornton SL, Ly B. Over-the-Counter Medications. James G. Adams Emergency Medicine. 2nd Ed. Saunders, 2012.
54. Thornton SL, Clark RF. Marine Envenomations. James G. Adams Emergency Medicine. 2nd Ed. Saunders, 2012.
55. Thornton SL. eMedicine: Antibiotic Guide: Urinary Tract Infections, 2011.
56. Thornton SL, Tomaszewski C. Herbals and Vitamins. Tintinalli's Emergency Medicine Manual, 7th Ed. McGraw-Hill Professional, 2012.

57. Thornton SL. Fracking. Encyclopedia of Toxicology, 3rd Edition. Academic Press, 2014.
58. Thornton SL. Snakes. Encyclopedia of Toxicology, 3rd Edition. Academic Press, 2014.
59. Thornton SL. Flail Chest. Rosen and Barkin's 5-Minute Emergency Medicine Consult; 5th Ed. Lippincott Williams & Wilkins. 2014.
60. Gallagher R, Thornton S. The Consequence of Grandpa's Loaded Medicine Cabinet. Avoiding Common Errors in the Emergency Department. 2nd Edition. Lippincott Williams & Wilkins. 2017.
61. Thornton SL, Darracq MS, Ly BT. Amphetamines, Cathinones (Bath Salts), and Cocaine. Guidelines for Investigating Officer-Involved Shootings, Arrest-Related Deaths, and Deaths in Custody. Routledge. 2018.
62. Darracq MS, Thornton SL, Ly BT. Central Nervous System Depressants. Guidelines for Investigating Officer-Involved Shootings, Arrest-Related Deaths, and Deaths in Custody. Routledge. 2018.
63. Thornton SL. Psychobehavioral Disorders. Emergency Medicine: Medical Specialty Board Review. Oxford. 2019

I have never testified in court but have been deposed for the following matters on the dates indicated below:

10/31/2019	Parker, Pilbon, Halladay v. Freeman Health System and Kirberg Roofing, INC., # 18A0-CC00223
06/3/2019	Steverson vs Shuter et al. # P1300 CV201600465
12/3/2018	Pearson et al vs Pribil et al. #16HI-CC0024
03/27/2018	Stamler et al. vs Emergency Care Specialists Inc et al. # CV-16-873358
11/27/2017	Ferrai et al. vs. Robbins #16CA-CC00146
10/24/2016	State of Missouri vs. Robbins #701910183

8/26/2016 Waldmann vs. Arab Shrine Temple #2015-CV-359
1/14/2016 Independent Medical Examiner for Marta Nelson
12/16/2015 Independent Medical Examiner for Barbara Robinson

For this report I reviewed for the following material which was provided to me or found through Pubmed (<https://www.ncbi.nlm.nih.gov/pubmed/>) searches.

- 1) Amended Autopsy Report of David Cutler performed by David C. Winston, MD, PhD signed 8/9/2017
- 2) Arizona Department of Health Services Response to Subpoena to Produce Documents.
- 3) Unprofessional Conduct Report of Paramedic Grant Reed
- 4) Pima County and Barnes' First Supplemental Response to Mandatory Initial Discover.
- 5) Bates Pima County video clips.
- 6) Pima County's and Barnes' Response to Mandatory Initial Discovery.
- 7) Pima County Sheriff's Department Detailed Incident Report for 170605101
- 8) Emails Between Dr. Cutler and Pima County
- 9) Transcript of 911 Calls/Radio Traffic
- 10) PCSD Training PowerPoint on Sudden In Custody Death
- 11) Northwest Medical Center Hyperthermia Administrative Order
- 12) Northwest Medical Center Behavioral Administrative Order
- 13) Grant Reed (Rural Metro) Statement
- 14) Deputy Barnes Statement
- 15) Rural/Metro Pima Patient Care Report
- 16) Tucson Medical Center Records
- 17) LoVecchio DO, Expert Report

- 18) Evans, NREMT-P, Expert Report
- 19) Taylor, PhD, Expert Report
- 20) Deposition of Grant Reed dated 6/25/2019
- 21) Deposition of Bentley Bobrow, MD dated 5/3/2019
- 22) Deposition of Vince Figueroa dated 6/25/2019
- 23) Deposition of David Winston, MD dated 8/15/2019
- 24) Statement of Megan Cypcar

References reviewed.

- 1) Meehan TJ, Bryant SM, Aks SE. Drugs of abuse: the highs and lows of altered mental states in the emergency department. *Emerg Med Clin North Am.* 2010 Aug;28(3):663-82.
- 2) Klock JC, Boerner U, Becker CE. Coma, hyperthermia and bleeding associated with massive LSD overdose. A report of eight cases. *West J Med.* 1974 Mar;120(3):183-8.
- 3) Gillman PK. Triptans, serotonin agonists, and serotonin syndrome (serotonin toxicity): a review. *Headache.* 2010 Feb;50(2):264-72.
- 4) Friedman SA, Hirsch SE. Extreme hyperthermia after LSD ingestion. *JAMA.* 1971 Sep 13;217(11):1549-50.
- 5) Liskow B. Extreme hyperthermia from LSD. *JAMA.* 1971 Nov 15;218(7):1049.
- 6) Rosenberg J, Pentel P, Pond S, Benowitz N, Olson K. Hyperthermia associated with drug intoxication. *Crit Care Med.* 1986 Nov;14(11):964-9.
- 7) Nichols DE, Grob CS. Is LSD toxic? *Forensic Sci Int.* 2018 Mar; 284:141-145.

- 8) Dolder PC, Schmid Y, Steuer AE, Kraemer T, Rentsch KM, Hammann F, Liechti ME. Pharmacokinetics and Pharmacodynamics of Lysergic Acid Diethylamide in Healthy Subjects. Clin Pharmacokinet. 2017 Oct;56(10):1219-1230.
- 9) Upshall DG, Wailling DG. The determination of LSD in human plasma following oral administration. Clin Chim Acta. 1972 Jan;36(1):67-73.
- 10) Fysh RR, Oon MC, Robinson KN, Smith RN, White PC, Whitehouse MJ. A fatal poisoning with LSD. Forensic Sci Int. 1985 Jun-Jul;28(2):109-13.
- 11) Mankowitz SL, Regenber P, Kaldan J, Cole JB. Ketamine for Rapid Sedation of Agitated Patients in the Prehospital and Emergency Department Settings: A Systematic Review and Proportional Meta-Analysis. J Emerg Med. 2018 Nov;55(5):670-681.
- 12) Linder LM, Ross CA, Weant KA. Ketamine for the Acute Management of Excited Delirium and Agitation in the Prehospital Setting. Pharmacotherapy. 2018 Jan;38(1):139-151.
- 13) Burnett AM, Watters BJ, Barringer KW, Griffith KR, Frascione RJ. Laryngospasm and hypoxia after intramuscular administration of ketamine to a patient in excited delirium. Prehosp Emerg Care. 2012 Jul-Sep;16(3):412-4.
- 14) Weisfeldt ML, Becker LB. Resuscitation after cardiac arrest: a 3-phase time-sensitive model. JAMA. 2002 Dec 18;288(23):3035-8.

Based on the above information, my summary of the events of June 5th, 2017 is as follows:

Per family, David Cutler's last known location was Tucson around 8:30 AM. It is believed he was driving his Jeep. It is also believed he had taken LSD early on June 5th, though the exact time and amount of use is not known. Megan Cypcar states that she did speak with David Culter around 1:38 AM and she perceived him as being impaired. At 5:30 AM it is known that he was taking photographs in downtown Tucson. He was documented to be at his brother's

apartment around 8:00 AM and there is where his cell phone was found. Around 9:40 AM a vehicle fire was reported in rural area of Pima County but the driver could not be located. The vehicle was later identified as belonging to David Cutler. It appeared to have been driven up a hill, struck a tree and then caught on fire. A local resident (Kristen Powell) reported hearing a man yelling for help at about 11:00 AM, but did not initially see anyone. A short while later she again heard a man yelling for help and observed a naked man yelling for help while walking up a hill. Ms. Powell called 911 at about 11:28 AM. Pima County Sheriff Deputy Barnes makes contact with David Cutler around 11:45 AM at or near the top of the hill and proceeds to speak with him. David Cutler allows himself to be handcuffed. Over the next 20 minutes, more deputies arrive. They further restrain David Cutler by his arms and legs and he is placed in RIPPS hobble restraints due to reports of combativeness. While restrained he is lying on the ground, fully exposed to the environment. There is no record of the deputies asking for or providing shading or cooling or hydration to David Cutler. Emergency medical services are called for at 11:48 AM. A Rural/Metro Pima ambulance arrives at 12:07 PM and makes contact with David Cutler at 12:13 PM. According to the records, Paramedic Grant Reed and EMT Vince Figueroa bring 500 mg of ketamine in a syringe with an 18 G needle. There is no documentation that any other equipment was brought to the scene by the paramedic or EMT. David Cutler's vital signs at 12:13 PM are reported to be a heart rate of 160 BPM and a respiratory rate of 34. There is no documentation of his initial blood pressure, temperature or oxygen saturation. His Glasgow Coma Score is reported to be a 10 with his eyes open spontaneously but he has incomprehensible speech and is only withdrawing from pain. No blood sugar is documented. Paramedic Reed administers no less than 300 mg of ketamine intramuscularly in the bilateral deltoids of David Cutler at 12:17 PM, stating that he "followed administrative order for excited delirium" which is the Northwest Medical Center (NWMC) Behavioral Administration Order. According to Paramedic Reed's report, David Cutler has a "positive response to ketamine administration." A Stokes basket and backboard are brought up

from the ambulance. David Cutler is then placed in a seated position but it is at this point that Paramedic Reed reports David Cutler to be showing signs of respiratory distress. For unclear reasons, at 12:27 PM, intramuscular naloxone is administered though there are no indications of opioid use or toxicity prior to his collapse. He then becomes apneic and pulseless though the exact time is not documented. Chest compressions are started. He is taken down to the waiting ambulance which appears to take ~ 5 minutes. While being taken to the ambulance water was reportedly poured on David Cutler. Once at the ambulance he is placed on a cardiac monitor and found to be in asystole. At 12:29 PM assisted ventilation is documented. At 12:34 PM a tympanic temperature of 102.9° F is documented. He is given more naloxone intramuscularly and then at 12:36 PM he is intubated after an intraosseous line is obtained. He is given multiple rounds of epinephrine (total of 4 mg), more naloxone (total of 6 mg) and amiodarone (300 mg). He is defibrillated at 12:40 for an episode of ventricular tachycardia but then develops pulseless electrical activity and asystole. His blood sugar is checked at 12:40 and reported to be 192 mg/dL. During David Cutler's pre-hospital care by the Rural/Metro PIMA paramedics there is no reference to them following the Northwest Medical Center Hyperthermia Order but there are reports of water being poured on David Cutler and ice packs being applied after he is in cardiopulmonary arrest.

David Cutler is transported to Tucson Medical Center "per NWMC cardiac arrest administrative order". There he receives calcium chloride 1 g, epinephrine 1 mg, magnesium sulfate 2 gram and sodium bicarbonate 50 mEq all via intravenous administration. He remains in asystole and an ultrasound notes no cardiac activity. A temporal temperature of 100.5° F is documented at 1:00 PM. After 15 minutes of resuscitation efforts at Tucson Medical Center, David Cutler is declared dead at 1:08 PM. The autopsy performed on June 7, 2017 by Dr. David Winston ascribed the cause of death as "hyperthermia due to exposure to the elements and lysergic acid diethylamide toxicity". Testing by Axis Forensic Toxicology on peripheral

blood obtained on June 7, 2019 (no time is given) is reported to be positive for naloxone (no level reported), ketamine (640 ng/mL), amiodarone (no level reported), caffeine (no level reported), and lysergic acid diethylamide (0.12 ng/mL).

From this information and based on my education, training and experience, the following are my opinions, to a reasonable degree of scientific certainty, on the condition and care of David Cutler on June 5, 2017.

- 1) David Cutler death on June 5, 2017 was not due to lysergic acid diethylamide (LSD) nor were his symptoms at the time of his death due to LSD. LSD is a potent hallucinogen. When taken it can cause profound hallucinations along with tachycardia and hypertension. Peak effects of LSD are typically seen within the first 6 hours of use and rapidly decline from there with symptoms rarely lasting more than 12 hours. This is consistent with LSD case I have managed personally. If, assuming David Cutler was under the influence of LSD at 1:38 AM, it would be very unlikely that he would still demonstrating significant signs of intoxication nearly 8 hours later. Deaths from LSD are rare, with some literature stating there is "not a single documented death due to LSD at recreational doses" (Nichols). In my 7 years as a medical toxicologist and poison control center medical director, I have not seen any deaths associated recreational use of LSD. By all accounts, David Cutler was using LSD recreationally. As with any drug, massive ingestions or overdoses of LSD can rarely be associated with deaths. However, there is no report that David Cutler's overdosed and his reported post-mortem peripheral blood LSD concentration of 0.12 ng/mL is almost ~100 times less than blood levels found in cases of LSD overdoses (Fysh). The serum half-life of LSD is approximately 2-3 hours (Dolder). Thus, at the time of the crash it could be estimated that David Cutler's LSD level would approximately 0.25 ng/ml. Even this level more than 10 times less than levels seen in patients given LSD who did not manifest significant toxicity and rather had

only mild symptoms (Upshall, Dolder). Furthermore, based on the Dodler et al. study which examined the levels and associated symptoms of 40 individuals given known amounts of LSD, an LSD level of 0.12 ng/mL or 0.25 ng/mL would be expected to cause little if any symptoms for David Cutler at the time of his death or crash, respectively. It would not be causing his elevated temperature, heart rate or agitation. This is notable because there is an erroneous belief that in this case, the LSD caused David Cutler's hyperthermia. While there have been rare reports of LSD causing elevated temperatures after overdoses, in reality, experts note "...that LSD does not usually produce hyperthermia" (Gillman). This is especially true in David Cutler's case as the levels of LSD in his system at the time of his death are minimal and 100 time less than those seen in overdose cases. This is demonstrated even further by the Dolder study which saw rises in temperatures of only 0.6 degrees Celsius or 1.8 degrees Fahrenheit with levels 10 to 30 time greater than David Cutler's. Rather David Cutler's delirium (altered mental status) was clearly caused by environmental induced hyperthermia with end organ dysfunction (i.e. heat stroke) with the possible contribution of a close head injury from his recent motor vehicle accident.

- 2) Due to his heat stroke, David Cutler had no capacity to care for himself and was at the mercy of the paramedics and law enforcement officers to make appropriate decisions and render effective treatment. The evaluation, decision making and treatment rendered by Paramedic Grant Reed to David Cutler on June 5, 2017 was below the standard of care and he demonstrated gross negligence and willful indifference to his professional responsibilities. This is demonstrated multiple times:
 - a. The Rural/Metro Pima protocols under which paramedic Grant Reed was operating under were not followed. The Northwest Medical Center Behavioral Administrative Order begins with initiation of supportive care, including obtaining

vital signs, temperature and blood sugar along with placing the patient on cardiac monitor and oxygen if need. A blood pressure, oxygen saturation, blood glucose and temperature were not obtained prior to administration of ketamine. David Cutler developed cardiopulmonary arrest yet prior to this was not evaluated to see if his oxygen situation was low thereby requiring supplemental oxygen or if his blood pressure was low thereby requiring interventions other than ketamine. Derangements in both of these vital signs can lead to the rapid cardiopulmonary collapse that David Cutler developed and simple treatments of either (supplemental oxygen or intravenous fluids) could have prevented his cardiac arrest. Paramedic Reed testified that he was familiar with his administrative orders yet appears to have willfully ignored them. This gross negligence in failing to follow established protocols directly led to David Cutler's death.

- b. The decision to use ketamine without the availability of appropriate equipment was grossly negligent. The use of ketamine to treat agitated patients in the pre-hospital setting has become common (Mankowitz, Linder). However, it is important to note the use of ketamine comes with multiple complications that require close monitoring and ready access to potentially life-saving equipment such as airway support. In some studies, over 1 in 4 patient given ketamine in the pre-hospital setting require intubation (Mankowitz). Increased airway secretions which can compromise breathing is also known adverse effect of ketamine (Linder). David Cutler is noted by one of the deputies to be drooling after the ketamine administration yet ready treatment (airway suctioning) was not available. Another well-known ketamine complication that could lead to rapid demise is laryngospasm (Burnett, Mankowitz). Treatment would require positive pressure bag-valve mask ventilation or intubation. It is for these exact reasons that the Northwest Medical Center Behavioral Administrative Order, which

Paramedic Reed was supposed to be following, clearly states "O2 to maintain sat > 90%" and "cardiac monitor" at the beginning of the order set. Paramedic Reed decision to use ketamine and willfully ignore the need for immediate access to life saving equipment was below the standard of care, grossly negligent and directly contributed to David Cutler's death.

- c. Paramedic Reed either failed to properly evaluate Mr. Cutler for heat stroke or willfully ignored the obvious signs of heat stroke that David Cutler was demonstrating. Heat stroke is the result of severe hyperthermia, usually from exertions in a hot environment. Heat stroke is a life-threatening emergency condition. It can rapidly result in dysfunction and damage to multiple organs including the brain which manifest as altered mental status or delirium. It is not in dispute that David Cutler was demonstrating delirium but Paramedic Reed did not appear to appreciate that heat stroke is a potential cause of such delirium and made no attempt to treat it. David Cutler's had obvious signs of heat stroke yet his temperature was not checked until well after the ketamine administration and there was no indication that Paramedic Reed even considered using the Northwest Medical Center Hyperthermia Administrative Orders before David Cutler went into cardiac arrest. In my opinion, rapid recognition David Cutler's heat stroke and prompt institution of cooling measures would have saved David Cutler's life. Paramedic Reed did not do so and this was not only below the standard of care but grossly negligent considering the obvious signs of life-threatening heat stroke David Cutler was manifesting.
- d. The administration of multiple rounds of naloxone to David Cutler was below the standard of care as naloxone is an antidote or reversal agent for the effects of opioids such as heroin or fentanyl. Opioids produce sedation and respiratory depression. Prior to his cardiopulmonary arrest there was no indication that

David Cutler was under the influence of opioids nor was there any report that he had taken any. Naloxone is not a reversal agent for ketamine nor is it treatment for heat stroke. The administration of naloxone multiple times was below the standard of care as it was not indicated and it resulted in harm for David Cutler as more beneficial therapies such as defibrillation or assisted ventilation could have been performed during the time it took to administer naloxone.

- e. Paramedic Reed failed to bring potentially lifesaving equipment such as an oxygen tank, a bag valve mask, a portable defibrillator or advanced cardiac life support medications such as epinephrine when he came up to treat David Cutler. Incredulously, Paramedic Reed sent EMT Figueroa back down to the ambulance for an 18 G needle but never requested any potentially life-saving equipment. When David Cutler went into cardiopulmonary arrest, there was approximately 5 minutes or more where only CPR was being provided to him. The first several minutes of a cardiac arrest are when rapid defibrillation can be most effective and lifesaving (Weisfeldt). Yet, it was not provided to David Cutler as Paramedic Reed made the decision to not bring such equipment with him. David Cutler's cardiac arrest could have been due to pulmonary failure and early, simple treatment with oxygen and ventilation with a bag valve mask might have saved his life. He was not provided these basic, portable treatments until he was carried down to the ambulance, at least 5 minutes into his arrest. Quality CPR is critical in treating cardiopulmonary arrest. But because Paramedic Reed did not bring with him any life-saving equipment, David Cutler had to be given CPR during a transport in a Stoke's basket down a hill. Providing true, quality CPR in this setting is almost impossible. Had Paramedic Reed brought the appropriate, and common life-saving equipment then David Cutler could have had quality CPR performed in place, increasing his chances of survival. Paramedic Reed's

decision not to bring any potentially life-saving equipment with him was grossly negligent, indifferent and directly led to David Cutler's death.

- 3) The treatment of David Cutler by Deputy Barnes and the other Pima County Sheriff's Department's officers was grossly negligent and indifferent and directly led to his death. In particular, the actions or lack of actions by Deputy Barnes's, who had the longest contact with David Cutler and was in the position of on-scene authority were particularly negligent. From the videos of taken of David Cutler, it was and should be obvious to even non-medical personnel he was suffering from severe, life-threatening environmental stress, i.e. heat stroke. He was demonstrating almost every sign and symptom that the Pima County Sheriff's Department's own training on heat stroke listed, including rapid breathing, no perspiration, and altered mental status. Due to his severe condition, David Cutler had no capacity to care for himself and was at the mercy of the paramedics and law enforcement officers to render appropriate treatment. Yet, in over 30 minutes, neither Deputy Barnes nor any of the other deputies attempted to hydrate, cool or even shade David Cutler while he lay exposed to the full sun and on ground that may have been up to 140° F. This gross negligence is crystalized by the sobering fact that David Cutler went from talking and cooperating with commands to cardiac arrest in the approximately 30-40 minutes deputy Barnes was involved in his care. Furthermore, instead of attempting to treat David Cutler for his life-threatening condition, deputy Barnes and the other Pima County Sheriff's Department's officers exacerbate the situation by restraining David Cutler naked on the hot desert ground and by further restraining him with RIPP restraints. This led to him to becoming even more agitated and worsened his condition. These actions by Deputy Barnes and the other officers were grossly negligent, willfully indifferent and directly led to David Cutler's death.

I reserve the right to amend this report should new or additional information be made available. For my time and services, I charge \$450 per hour to review and discuss pertinent medical records, perform medical literature search and produce any written opinions with a 4 hour minimum retainer, \$600 per hour to give deposition with 3 hours minimum plus time and travel and \$6000 for courtroom testimony plus time and travel which is billed at \$75/hour .

Sincerely,

A handwritten signature in black ink that reads "Stephen Thornton". The signature is written in a cursive, flowing style.

Stephen Thornton, MD 11/06/2019

Stephen Louis Thornton, M.D.

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EDUCATION

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06/2001-07/2005	PGY1-PGY4 Emergency Medicine Residency University Medical Center/UCSF-Fresno 445 S. Cedar, Fresno CA 93702 559- 499-6440
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LICENSURE

2002-Present	California License #: A80775 Issued 10/09/2002 Expiration 12/30/2013 - Inactive
2003-Present	Drug Enforcement Administration License: #BT8368652 Issued 7/08/2003 Expires 11/30/2020
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2005-Present	Missouri License #: 2005011352 Issued 4/14/2005 Expiration 01/31/2020
2005-Present	Kansas License #: 04-31362 Issued 6/11/2005 Expiration 06/30/2019
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CERTIFICATION

2006-Present	American Board of Emergency Medicine Certification #36039 Issued 11/16/2006 Expires 12/31/2026
2005-Present	NPI #1477560803
2005-Present	UPIN I26820
2008-Present	Fellow of the American College of Emergency Physicians
2012-Present	American Board of Emergency Medicine Certification Subspeciality – Medical Toxicology #36039 Issued 12/10/2012 Expires 12/31/2022
2016-Present	Basic Life Support Expires 5/2020
2018-Present	Advanced Cardiac Life Support Expires 05/2020
2017-Present	Toxic Chemical Training Course – US Army Completed 4/7/2017
2018-Preset	Certified Medical Review Officer American Association of Medical Review Officers # 181209123 Expires 12/9/2023

ABSTRACTS

1. Chinnock B, Thornton S, Hendey G: Nurse-performed Ultrasound-guided Upper

Extremity Venous Cannulation in Emergency Department Patients with Difficult Venous Access. *Academic Emergency Medicine* 2005;12:S35. Abstract 082.
Poster Presentation 2005 Society for Academic Emergency Medicine Annual Meeting

2. Thornton S, Minns A, Clark RF. Massively elevated blood mercury levels after elemental mercury exposure with minimal morbidity. *Clinical Toxicology* 2011, 49: 590.
Poster Presentation at 2011 North American Congress of Clinical Toxicology (NACCT).
3. Thornton SL, Abdelmalek J, Nizar J, Sanchez A, Schneir A. Continuous renal replacement therapy to overcome hydroxocobolamin-induced plasma discoloration. *Clinical Toxicology* 2011, 49: 535.
Poster Presentation at 2011 NACCT
4. Thornton SL, Nguyen K, Shen S, Tomaszewski C, Clark RF, Cantrell FL. Early GI symptoms do not predict antivenom use or bite severity in rattlesnake envenomation. *Clinical Toxicology* 2011, 49: 578.
Poster Presentation at 2011 NACCT
5. Thornton SL, Romasco R, Soleymani K, Clark RF, Cantrell FL, Sarid H.A descriptive study of antineoplastic drug exposures in pediatric patients 5 years old and younger. *Clinical Toxicology* 2011, 49: 551.
Poster Presentation at 2011 NACCT.
6. Thornton SL, Oyama L. Impact of a third year emergency medicine (EM) selective on rated importance of clinical activities and decision to pursue future EM training.
Poster Presentation 2012 Council of Residency Directors Academic Assembly.
7. Darracq MA, Thornton SL, Do HM et. al. Recommendations and use of high-dose insulin and intralipid following beta and calcium channel blocker toxicity. *Clinical Toxicology* 2012, 50: 586.
Poster Presentation at 2012 North American Congress of Clinical Toxicology (NACCT)
8. Thornton SL, Pchelnikova J, Cantrell FL. A review of pediatric exposures to anti-dementia drugs reported to a state wide poison control system. *Clinical Toxicology* 2012, 50: 599.
Poster Presentation at 2012 NACCT
9. Schneir A, Ly BT, Smolin C, Thornton S, et al. Comprehensive drug analysis of "bath salts" purchased in the United States. *Clinical Toxicology* 2012, 50: 574.
Poster Presentation at 2012 NACCT
10. Thornton SL, Darracq MA, Lo CL, et al. Retrospective review of castor bean plant exposures reported to a state-wide poison control system. *Clinical*

Toxicology 2012, 50: 657.

Poster Presentation at 2012 NACCT

11. Thornton SL, Clark RF. Encephalopathy from unintentional donepezil and memantine ingestion in a 2 year child with confirmatory serum levels. *Clinical Toxicology* 2012, 50: 600.
Poster Presentation at 2012 NACCT
12. Lo CL, Rafie S, Thornton SL, et al. Development of a droperidol application guideline: influence of a policy on continuous droperidol usage. *Clinical Toxicology* 2012, 50: 670.
Poster Presentation at 2012 NACCT
13. Thornton SL, Gerona RR, Tomaszewski C. Psychosis from a bath salt product containing flephedrone and MDPV with serum, urine, and product quantification. *Clinical Toxicology* 2012, 50: 704.
Poster Presentation at 2012 NACCT
14. Rafi N, Thornton S, Tomaszewski C. Emergency Department Assessment of Alcohol Withdrawal.
Poster Presentation at American College of Emergency Medicine Scientific Assembly 2012.
15. Savaser D, Thornton S, Carstairs S, Gerona R. Hypotension and Acute Kidney Injury from Overdose of Losartan and Telmisartan. *J. Med. Toxicol.* 2013, 9:100
Poster Presentation at American College of Medical Toxicologists 2013 Annual Meeting
16. Thornton S, Farnaes L. Prolonged antimuscarinic delirium in a child due to benztropine exposure treated with multiple doses of physostigmine. *Clinical Toxicology* 2013, 51: 601.
Poster Presentation at 2013 NACCT
17. Thornton SL, Darracq MA, Klauk B, Cantrell FL. Fasciotomy and rattlesnake envenomations: characteristics of a statewide poison control center's experience. *Clinical Toxicology* 2013, 51: 619.
Poster Presentation at 2013 NACCT
18. Thornton S, Akpunonu P, Luu S, Brudevold J, Lee P, Cantrell FL. Prevalence and characteristics of hypofibrinogenemia after North American rattlesnake envenomations reported to a statewide poison control system. *Clinical Toxicology* 2013, 51: 620.
Poster Presentation at 2013 NACCT
19. Darracq MA, Thornton SL, Minns AB, Gerona RR. 3,4 Dimethoxyamphetamine: Hallucinogen and CYP2D6 inhibitor? A case report. *Clinical Toxicology* 2013, 51: 680.
Poster Presentation at 2013 NACCT

20. Tomaszewski C, Thornton S. Comprehensive urine drug of abuse screens in emergency psychiatric patients. *Clinical Toxicology* 2013, 51: 681
Poster Presentation at 2013 NACCT
21. Thornton S, Oller L, Sawyer T. Fatal intravenous injection of electronic cigarette “eLiquid” solution. *Clinical Toxicology* 2013, 51: 683.
Poster Presentation at 2013 NACCT
22. Christian MR , Lowry JA , Algren DA , Thornton SL, S Deng S , Garg U. Do rapid comprehensive urine drug screens change clinical management in children? *Clinical Toxicology* (2014), 52: 697-8. Abstract 33.
Poster Presentation at 2014 NACCT
23. Lowry J, Thornton S, Albadreen R, Gerona RR. Hot Molly!
Methylenedioxybenzylpiperazine use associated with prolonged encephalopathy. *Clinical Toxicology* (2014), 52: 706-7. Abstract 52.
Poster Presentation at 2014 NACCT
24. Akpunonu P, Luu S, Brudevold J, Lee P, Cantrell FL, Thornton S. Prevalence and characteristics of thrombocytopenia after North American rattlesnake envenomations reported to a statewide poison control system. *Clinical Toxicology* (2014), 52: 739. Abstract 124.
Poster Presentation at 2014 NACCT
25. Thornton S, Crane T. Laboratory confirmed massive donepezil ingestion. *Clinical Toxicology* (2014), 52: 764. Abstract 181.
Poster Presentation at 2014 NACCT
26. Thornton S, Bute S, Gerona RR. Magic BBQ? 10 year old with laboratory confirmed psilocin intoxication. *Clinical Toxicology* (2014), 52: 764-5. Abstract 182.
Poster Presentation at 2014 NACCT
27. Oller L, Pearce E, Mehta K, Kurth B, Grillot T, Befort C, Thornton SL. Utilization of a poison control center by critical access hospitals – one state ’ s experience. *Clinical Toxicology* (2014), 52: 778. Abstract 211.
Poster Presentation at 2014 NACCT
28. Abdelmalek D, Mullins ME, Arryo-Plasencia A, Schwarz ES, Weber J, Sampson CS, Thornton SL. Factitious snake envenomation and narcotic seeking behavior. *Clinical Toxicology* (2014), 52: 792. Abstract 242.
Poster Presentation at 2014 NACCT
29. Armenian P, Thornton S, Gugelmann H, Gerona RR Ease of Identifying and Purchasing Popular “Research Chemicals” via the Internet. *Clinical Toxicology* (2015), 53, 639. Abstract 2
Poster Presentation at 2015 NACCT

30. Thornton SL, Bram D, Milligan D, Gerona R. Rhabdomyolysis associated with laboratory confirmed FUB-AMB use. *Clinical Toxicology* (2015), 53, 650. Abstract 25
Poster Presentation at 2015 NACCT
31. Gallagher R, Dangers J, Thornton SL. Angel Dust Trauma: Effect of phencyclidine positive urine immunoassay drug screens on morbidity or mortality from trauma. *Clinical Toxicology* 2015, 53, 655. Abstract 34
Poster Presentation at 2015 NACCT
32. Castelli R, Thornton SL, Akpunonu P, Gerona R. True or False? Analysis of phencyclidine positive urine drug immunoassays with liquidchromatography-time-of-flight mass spectrometry. *Clinical Toxicology* (2015), 53, 667. Abstract 62
Poster Presentation at 2015 NACCT
33. Gugelmann H, Armenian P, Gerona R, Thornton S. Sketchy Spice: Characteristics and limitations of synthetic cannabinoid-related toxicologic case reports. *Clinical Toxicology* (2015), 53, 691. Abstract 113
Poster Presentation at 2015 NACCT
34. Christian MR, Thornton SL. Use of continuous veno-venous hemodialysis (CVVHD) to treat refractory metabolic acidosis due to massive ibuprofen overdose. *Clinical Toxicology* (2015), 53, 707. Abstract 148
Poster Presentation at 2015 NACCT
35. Thornton SL, Pruitt B, Marx J. Massive inadvertent pediatric ketamine overdose with serial levels. *Clinical Toxicology* (2015), 53, 719. Abstract 172
Poster Presentation at 2015 NACCT
36. Thornton SL, Akpunonu P, Glauner K, Hoehn KS, Gerona RR. Severe symptoms from an unintentional pediatric exposure to AB-PINACA with laboratory confirmation *Clinical Toxicology* (2015), 53, 724. Abstract 184.
Poster Presentation at 2015 NACCT
37. Gallagher R, Dangers J, Thornton SL. Angel Dust Trauma: Effect of phencyclidine positive urine immunoassay drug screens on morbidity or mortality from trauma. Abstract 426.
Poster presentation at ACEP 2015, Boston, MA.
38. Thornton SL, Lisbon D, Gallagher R, Castelli R, Gerona RR. Not Your Father's N-methyl-D-aspartate Receptor Antagonists: Analytically Confirmed Toxicity from Concurrent Novel N-methyl- D-aspartate Receptor Antagonists Use. Abstract 25. *J. Med. Toxicol.* (2016) 12:11.
Poster presentation ACMT 2016, Huntington Beach, CA.

39. Gallagher R, Dangers J, Thornton SL. Angel Dust Trauma: Effect of phencyclidine positive urine immunoassay drug screens on morbidity or mortality from trauma. Abstract 85. J. Med. Toxicol. (2016) 12: 31.
Poster presentation ACMT 2016, Huntington Beach, CA.
40. Castelli R, Thornton SL, Akpunonu P, Gerona R. To Be or Not to Be PCP: That Is the Question. Abstract 102. J. Med. Toxicol. (2016) 12: 31.
Poster presentation ACMT 2016, Huntington Beach, CA.
41. Garg U, Johnson L, Wiebold A, Ferguson A and Thornton S. False Positive Carbamazepine Results by Gas-Chromatography Mass Spectrometry (GC-MS) and by VITROS 5600 Carbamazepine Assay Following a Massive Oxcarbazepine Ingestion. American Association for Clinical Chemistry Meeting, July 31-August 4, 2016, Philadelphia, PA.
42. Thornton S, Perez Marques F, Panchal A, Lin T, Gerona R. Too much NRG-3 for a 3 year old? Ataxia associated with unintentional synthetic cathinone exposure. Clinical Toxicology. (2016), 54, 766. Abstract 232.
Poster Presentation at 2016 NACCT
43. Castelli R, Grow K, Oller L, Sawyer T, Thornton S. Loxoscelophobia: Characteristics of Brown Recluse Bites Called To A Regional Poison Control Center. Clinical Toxicology. (2016), 54, 672. Abstract 29
Poster Presentation at 2016 NACCT
44. Gallagher R, Gallagher D, Castelli R, Hosey N, MacRae E, Lawson E, Williard E, Hunter J, Scott M, Thornton S. Serial Nonsense? Clinical Characteristics and Trends in Cases with Serial Carboxyhemoglobins. Clinical Toxicology. (2016), 54, 723. Abstract 139
Poster Presentation at 2016 NACCT
45. Thornton S, Stoecker WV, Schwerdtfager J, Green JA, Langner T. Myocarditis associated with enzyme-linked immunosorbent assay-confirmed Loxoceles reclusa envenomation. Clinical Toxicology. (2016), 54, 673. Abstract 30.
Poster Presentation at 2016 NACCT
46. Thornton S, Bhimavarapu BBR, Panchal A. Unintentional Ingestion of Extended Release Oral Suspension of Methylphenidate With Serial Serum Levels. Clinical Toxicology. (2016), 54, 766. Abstract 231
Poster Presentation at 2016 NACCT
47. Tung R, Oller L, Thornton S. A Toxic Alcohol By Any Name?: Comparison of Laboratory Confirmed Ethylene Glycol and Methanol Exposures Reported To A Regional Poison Control Center. Clinical Toxicology. (2016), 54, 673. Abstract 31
Poster Presentation at 2016 NACCT
48. Darracq M, Armenian P, Comes J, Thornton S. Emergency Medicine Residency

toxicology education: a survey study. *Clinical Toxicology*. (2016), 54, 782.
Abstract 268.
Poster Presentation at 2016 NACCT

49. Darracq M, Lung D, Thornton S. Employment survey of recent medical toxicology fellowship graduates. *Clinical Toxicology*. (2016), 54, 689. Abstract 66.
Poster Presentation at 2016 NACCT
50. Thornton S, Langner T, Adams A, Vaughan E, Gerona R. Too Much NRG-3: Refractory Excited Delirium Associated with 2-(Methylamino)-1-(Naphthalen-2-yl)Pentan-1-one Use. *J. Med. Toxicol.* (2017) 13: 21 Abstract 53.
Poster presentation ACMT 2017, San Juan, PR.
51. Thornton S, Langner T, Gerona R. Tryptamine Trauma! N,N-Dipropyltryptamine Associated Fall, Seizure and Rhabdomyolysis. *J. Med. Toxicol.* (2017) 13: 22 Abstract 54.
Poster presentation ACMT 2017, San Juan, PR.
52. Gallagher R, Gallagher D, Castelli R, Hosey N, Macrae M, Lawson M, Willard E, Slanzcka E, Hunter J, Scott M, Thornton S. Serial Nonsense? Clinical Characteristics and Trends in Cases With Serial Carboxyhemoglobins. *J. Med. Toxicol.* (2017) 13: 19-20 Abstract 48.
Poster presentation ACMT 2017, San Juan, PR.
53. Thornton S, Darracq M, Gugelmann H, Armenian P. Highs in Stock? Inventory of Research Chemical Internet Vendors. *J. Med. Toxicol.* (2017) 13: 22 Abstract 55.
Poster presentation ACMT 2017, San Juan, PR.
54. Darracq M, Lung D, Thornton S. Employment Survey of Recent Medical Toxicology Fellowship Graduates. *J. Med. Toxicol.* (2017) 13: 34 Abstract 92.
Poster presentation ACMT 2017, San Juan, PR.
55. Darracq M, Armenian P, Comes J, Thornton S. Emergency Medicine Residency Toxicology Education: A Survey Study *J. Med. Toxicol.* (2017) 13: 34-35 Abstract 93.
Poster presentation ACMT 2017, San Juan, PR.
56. Thornton S, Darracq M. Bad stickers: pediatric transdermal drug delivery systems exposures reported to the NPDS. *Clinical Toxicology*. (2017), 55(7): 754. Abstract 109.
Poster Presentation at 2017 NACCT.
57. Thornton S, Darracq M, Gugelmann H, Armenian P. Highs in Stock? Inventory of Research Chemical Internet Vendors. *Clinical Toxicology*. (2017), 55(7): 800. Abstract 190.
Poster Presentation at 2017 NACCT.

58. Thornton S, Pallo N, Whitacre J, Roberts N, Oller L. Where's the withdrawal? Retrospective review of benzodiazepine withdrawal. *Clinical Toxicology*. (2017), 55(7): 800-801. Abstract 191.
Poster Presentation at 2017 NACCT.
59. Thornton S, Darracq M. The poison patch: adult transdermal drug delivery system exposures reported to NPDS. *Clinical Toxicology*. (2017), 55(7): 845-6. Abstract 272.
Poster Presentation at 2017 NACCT.
60. Thornton S, Darracq M. Patch of death? Transdermal fentanyl delivery system exposures reported to the NPDS. *Clinical Toxicology*. (2017), 55(7): 846-7. Abstract 273.
Poster Presentation at 2017 NACCT.
61. Thornton S, Darracq M. A new Day (trana) for methylphenidate? Transdermal methylphenidate delivery system exposures reported to the NPDS *Clinical Toxicology*. (2017), 55(7): 847-8. Abstract 274.
Poster Presentation at 2017 NACCT.
62. Thornton S, Darracq M. Transdermal Selegiline Delivery System Exposures: Characteristics & Outcomes Reported to the NPDS Over 10 Years. *J. Med. Toxicol*. 2018. Abstract 101
Poster Presentation at ACMT 2018 Washington D.C.
63. Thornton S, Darracq M. Patch Problems? Characteristics and Outcomes of Transdermal Buprenorphine Delivery System Exposures Reported to the NPDS. *J. Med. Toxicol*. 2018. Abstract 32.
Poster Presentation at ACMT 2018 Washington D.C.
64. Thornton S, Pallo N, Whitacre J, Roberts N, Oller L. In Search of Acute Benzodiazepine Withdrawal: A Retrospective Review of an Academic Medical Center's Experience. *J. Med. Toxicol*. 2018. Abstract 65.
Moderated Poster Presentation at ACMT 2018 Washington D.C.
65. Thornton S, Darracq M. Modified high? Adult modified release stimulant exposures reported to the NPDS. *Clin Toxicol (Phila)*. 2018 Oct;56(10): 120 Abstract 200.
Poster Presentation at NACCT 2019 Chicago, IL
66. Thornton S, Darracq M. Sustained stimulation? Pediatric modified release stimulant exposures reported to the NPDS. *Clin Toxicol (Phila)*. 2018 Oct;56(10): 168. Abstract 279.
Poster Presentation at NACCT 2019 Chicago, IL

PUBLICATIONS

1. Chinnock B, Thornton S, Hendey GW. Predictors of success in nurse-performed ultrasound-guided cannulation. *J Emerg Med.* 2007 Nov;33(4):401-5. Epub 2007 Jul 5.
2. Thornton S. Mercury. *Call Us....The Official Newsletter of the California Poison Control System* 2011; 9(1).
3. Thornton S, Gutovitz S. Intravenous Overdose of Insulin Glargine without Prolonged Hypoglycemic Effects. *J Emerg Med.* 2011 Nov 4. [E-pub ahead of print.]
4. Ly BT, Thornton SL, Buono C, Stone JA, Wu AH. False-Positive Urine Phencyclidine Immunoassay Screen Result Caused by Interference by Tramadol and Its Metabolites. *Ann Emerg Med.* 2011 Sep 14. [Epub ahead of print]
5. Abdelmalek J, Thornton S, Nizar J, Schneir A, Sanchez AP. Successful use of continuous renal replacement therapy after hydroxocobalamin administration. *Dial. Transplant.* 2011; 40: 415–17.
6. Thornton S. “Bath Salts”-Synthetic Cathinones. *Call Us....The Official Newsletter of the California Poison Control System* 2011; 9(4).
7. Thornton SL, Minns AB. Unintentional Chronic Acetaminophen Poisoning During Pregnancy Resulting in Liver Transplantation. *J Med Toxicol.* 2012 Mar 14.
8. Thornton SL, Gerona RR, Tomaszewski CA. Psychosis from a Bath Salt Product Containing Flephedrone and MDPV with Serum, Urine, and Product Quantification. *J Med Toxicol.* 2012 Apr 21. [Epub ahead of print]
9. Thornton SL, Nguyen KT, Shenn SK, Castillo EM, Clark RF, Cantrell FL. A Retrospective Review of Early Gastrointestinal Symptoms in the Prediction of Crotaline Envenomation Severity. *Wilderness Environ Med.* 2012 Jun 22.
10. Thornton S. Heavy metal poisoning should be recognized as a cause of hypertension in children. *Am Fam Physician.* 2012 Sep 1;86(5):394.
11. Thornton SL, Lo J, Clark RF, Wu AH, Gerona RR. Simultaneous detection of multiple designer drugs in serum, urine, and CSF in a patient with prolonged psychosis. *Clin Toxicol (Phila).* 2012 Dec;50(10):1165-8.
12. Darracq MA, Thornton SL, Do HM, Bok D, Clark RF, Cantrell FL. Utilization of Hyperinsulinemia Euglycemia and Intravenous Fat Emulsion Following Poison Center Recommendations. *J Med Toxicol.* 2013 Sep;9(3):226-30.
13. Thornton SL, Wood C, Friesen MW, Gerona RR. Synthetic cannabinoid use associated with acute kidney injury. *Clin Toxicol (Phila).* 2013 Mar;51(3):189-90.
14. Centers for Disease Control and Prevention (CDC). Acute kidney injury associated with synthetic cannabinoid use--multiple states, 2012. *MMWR Morb Mortal Wkly Rep.* 2013

Feb 15;62(6):93-8.

15. Thornton SL, Negus E, Carstairs SD. Pediatric zolpidem ingestion demonstrating zero-order kinetics treated with flumazenil. *Pediatr Emerg Care*. 2013 Nov;29(11):1204-6.
16. Thornton SL, Oller L, Sawyer T. Fatal Intravenous Injection of Electronic Nicotine Delivery System Refilling Solution. *J Med Toxicol*. 2014 Jun;10(2):202-4.
17. Thornton SL, Darracq M, Lo J, Cantrell FL. Castor bean seed ingestions: a state-wide poison control system's experience. *Clin Toxicol (Phila)*. 2014 Apr;52(4):265-8.
18. Garg U, Thornton S. NBOMe Drugs: Use of Dangerous New Hallucinogens Grows Despite Risks of Toxicity. *Clinical & Forensic Toxicology News*. 2014 June:: 1-5.
19. Schneir A, Ly BT, Casagrande K, Darracq M, Offerman SR, Thornton S, Smollin C, Vohra R, Rangun C, Tomaszewski C, Gerona RR. Comprehensive analysis of "bath salts" purchased from California stores and the internet. *Clin Toxicol (Phila)*. 2014 Aug;52(7):651-8.
20. Thornton SL, Clark RF. Encephalopathy from unintentional donepezil and memantine ingestion. *Pediatr Emerg Care*. 2014 Sep;30(9):649-50.
21. Abdelmalek D, Arroyo-Plasencia A, Schwarz ES, Weber J, Sampson CS, Thornton SL, Mullins ME. Factitious snake envenomation and narcotic-seeking behavior. *Am J Emerg Med*. 2015 Mar 14. pii: S0735-6757(15)00164-3.
22. Darracq MA, Cantrell FL, Klauk B, Thornton SL. A chance to cut is not always a chance to cure- fasciotomy in the treatment of rattlesnake envenomation: A retrospective poison center study. *Toxicon*. 2015 Apr 29. pii:S0041-0101(15)00111-7.
23. Abraham M, Tilzer L, Hoehn KS, Thornton SL. Therapeutic Plasma Exchange for Refractory Hemolysis After Brown Recluse Spider (*Loxosceles reclusa*) Envenomation. *J Med Toxicol*. 2015 May 23.
24. Albadareen R, Thornton S, Heshmati A, Gerona R, Lowry J. Unusually Prolonged Presentation of Designer Drug Encephalopathy Responsive to Steroids. *Pediatrics*. 2015 Jul;136(1):e246-8. doi: 10.1542/peds.2015-0073.
25. Thornton SL, Akpunonu P, Glauner K, Hoehn KS, Gerona R. Unintentional Pediatric Exposure to a Synthetic Cannabinoid (AB-PINACA) Resulting in Coma and Intubation. *Ann Emerg Med*. 2015 Sep;66(3):343-4.
26. Thornton SL, Farnaes L, Minns A. Prolonged Antimuscarinic Delirium in a Child Due to Benztropine Exposure Treated With Multiple Doses of Physostigmine. *Pediatr Emerg Care*. 2015 Sep 17.
27. Thornton SL, Hunter J, Scott M. Fatal Tension Pneumoperitoneum Due to Non-Accidental Trauma. *West J Emerg Med*. 2015 Sep;16(5):788-9.

28. Thornton SL, Pchelnikova JL, Cantrell FL. Characteristics of Pediatric Exposures to Antidementia Drugs Reported to a Poison Control System. *J Pediatr*. 2016 Feb 27. pii: S0022-3476(16)00133-5. doi: 10.1016/j.jpeds.2016.01.056. PubMed PMID: 26935787.
29. Thornton SL, Liu J, Soleymani K, Romasco RL, Farid H, Clark RF, Cantrell FL. Review of Experience of a Statewide Poison Control Center With Pediatric Exposures to Oral Antineoplastic Drugs in the Nonmedical Setting. *Am J Ther*. 2016 Mar-Apr;23(2):e377-81. Doi 10.1097/MJT.0b013e31829e8ba7. PubMed PMID: 23884076.
30. Gallagher R, Dangers J, Thornton SL. Do trauma patients with phencyclidine-positive urine drug screens have increased morbidity or mortality? *Am J Emerg Med*. 2016 Mar 11. pii: S0735-6757(16)00204-7.
31. Darracq MA, Thornton SL, Minns AB, Gerona RR. A Case of 3,4-Dimethoxyamphetamine (3,4-DMA) and 3,4-Methylenedioxymethamphetamine (MDMA) Toxicity with Possible Metabolic Interaction. *J Psychoactive Drugs*. 2016 Sep 16:1-4.
32. Thornton SL, Hoehn S, Gerona RR. Seizures, Systemic Inflammatory Response, and Rhabdomyolysis Associated With Laboratory-Confirmed 2C-I and 25-I Exposure. *Pediatr Emerg Care*. 2017 Apr 4.
33. Christian MR, Lowry JA, Algren DA, Thornton SL, Deng S, Garg U. Do rapid comprehensive urine drug screens change clinical management in children? *Clin Toxicol (Phila)*. 2017 Jun 8:1.
34. Thornton S, Lisbon D, Lin T, Gerona R. Beyond Ketamine and Phencyclidine: Analytically Confirmed Use of Multiple Novel Arylcyclohexylamines. *J Psychoactive Drugs*. 2017 Sep-Oct;49(4):289-293.
35. Garg, U., Johnson, L., Wiebold, A., Ferguson, A., Frazee, C., Thornton, S. False-Positive Carbamazepine Results by Gas Chromatography–Mass Spectrometry and VITROS 5600 Following a Massive Oxcarbazepine Ingestion. *The Journal of Applied Laboratory Medicine* Jan 2018.
36. Darracq MA, Armenian P, Comes J, Thornton S. Medical toxicology education in US emergency medicine residencies. *Am J Emerg Med*. 2018 Mar 3. pii: S0735-6757(18)30184-0. doi: 10.1016/j.ajem.2018.03.007.
37. Thornton SL, Oller L, Coons DK. 2016 Annual Report of the University of Kansas Health System Poison Control Center. *Kans J Med*. 2018 May; 11(2):23-33.
38. Marshall K, Thornton SL. Worse than the Disease? The Rash of Lomatium Dissectum. *Kan J Med*. 2018 May; 11(2): 54-55.
39. Tung RC, Thornton SL. Characteristics of Laboratory Confirmed Ethylene Glycol and Methanol Exposures Reported to a Regional Poison Control Center. *Kans J Med*.

30;11(3):67-69.

40. Bowman CF, Pruitt B, Marx J, Thornton SL. Massive Iatrogenic Pediatric Ketamine Overdose With Serial Levels and Minimal Morbidity. *Pediatr Emerg Care*. 2019 Feb 25.

CHAPTER CONTRIBUTIONS

1. Thornton SL. Cyproheptadine. *Toxicology Recall*, 1st Ed; Lippincott Williams & Wilkins, 2009.
2. Thornton SL. Physostigmine and Neostigmine. *Toxicology Recall*, 1st Ed; Lippincott Williams & Wilkins, 2009.
3. Thornton SL. Marine Envenomation. *Toxicology Recall*, 1st Ed; Lippincott Williams & Wilkins, 2009.
4. Thornton SL. Bromides. *Toxicology Recall*, 1st Ed; Lippincott Williams & Wilkins, 2009.
5. Thornton SL. Bromates. *Toxicology Recall*, 1st Ed; Lippincott Williams & Wilkins, 2009.
6. Thornton SL. Hydrogen Sulfide. *Toxicology Recall*, 1st Ed; Lippincott Williams & Wilkins, 2009.
7. Thornton SL. Isopropanol. *Toxicology Recall*, 1st Ed; Lippincott Williams & Wilkins, 2009.
8. Thornton SL. Antidiarrheal. *Toxicology Recall*, 1st Ed; Lippincott Williams & Wilkins, 2009.
9. Thornton SL. Antiemetics. *Toxicology Recall*, 1st Ed; Lippincott Williams & Wilkins, 2009.
10. Thornton SL. *eMedicine: Pediatrics, Urinary Tract Infections and Pyelonephritis*. 2008-2012.
11. Thornton SL. Flail Chest. *Rosen and Barkin's 5-Minute Emergency Medicine Consult*, 4th Ed. Lippincott Williams & Wilkins, 2010.
12. Thornton SL, Ly B. Over-the-Counter Medications. *James G. Adams Emergence Medicine*. 2nd Ed. Saunders, 2012.
13. Thornton SL, Clark RF. Marine Envenomations. *James G. Adams Emergence Medicine*. 2nd Ed. Saunders, 2012.

14. Thornton SL. *eMedicine: Antibiotic Guide: Urinary Tract Infections*, 2011.
15. Thornton SL, Tomaszewski C. Herbals and Vitamins. *Tintinalli's Emergency Medicine Manual*, 7th Ed. McGraw-Hill Professional, 2012.
16. Thornton SL. Fracking. *Encyclopedia of Toxicology*, 3rd Edition. Academic Press, 2014.
17. Thornton SL. Snakes. *Encyclopedia of Toxicology*, 3rd Edition. Academic Press, 2014.
18. Thornton SL. Flail Chest. *Rosen and Barkin's 5-Minute Emergency Medicine Consult*, 5th Ed. Lippincott Williams & Wilkins. 2014.
19. Gallagher R, Thornton S. The Consequence of Grandpa's Loaded Medicine Cabinet. *Avoiding Common Errors in the Emergency Department*. 2nd Edition. Lippincott Williams & Wilkins. 2017.
20. Thornton SL, Darracq MS, Ly BT. Amphetamines, Cathinones (Bath Salts), and Cocaine. *Guidelines for Investigating Officer-Involved Shootings, Arrest-Related Deaths, and Deaths in Custody*. Routledge. 2018.
21. Darracq MS, Thornton SL, Ly BT. Central Nervous System Depressants. *Guidelines for Investigating Officer-Involved Shootings, Arrest-Related Deaths, and Deaths in Custody*. Routledge. 2018.

CURRENT RESEARCH

2018 Novel Psychoactive Substance Detection Consortium

OTHER ACADEMIC ACTIVITIES

2014-Present	Reviewer- Clinical Toxicology
2016-Present	Reviewer- Pediatric Emergency Care

LECTURES/PRESENTATIONS

INVITED LECTURES

YEAR
2004

TITLE

“Unstable Cervical Spine Fractures”

Presented at University of Kansas Med Center to
Emergency Department Staff

2005	<p>“Ultrasound in the Emergency Department” Presented at University of Kansas Med Center to Emergency Department Staff.</p>
2006	<p>“What Is Emergency Medicine” Presented at University of Kansas Med Center to second and third year medical students.</p>
2006	<p>“Tox 101” Presented at University of Kansas Med Center to second and third year medical students</p>
2006	<p>“Toxicology of Prescription Drug Abuse” Presented to UCSF-Fresno Emergency Medicine Residents</p>
2007	<p>“Treatment of Migraines in the Emergency Department” Presented to UCSF-Fresno Emergency Medicine Residents</p>
2007	<p>“Hypoglycemia and Metabolic Acidosis in a Pediatric Patient.” Presented to UCSF-Fresno Emergency Medicine Resident.</p>
2008-2010	<p>“Medical Student Lecture Series on Basics in Emergency Medicine.” Given to fourth year medical students rotating in KUMC Emergency Department.</p>
2010	<p>“Toxic Salsa: Drugs of Abuse, Poisonous Plants, Stings & Bites” Presented to UCSD/Palomar Paramedic College Lecture Series</p>
2010	<p>“When Getting High, Gets You Down...” Presented at UCSD ED Nurses, Paramedics & EMTs CE course</p>
2010	<p>“Toxidromes” “Acetaminophen Toxicity” “Toxic Alcohols” “Crotalid Envenomations” “Urine Drug Screens” Guest Lecture Series in Toxicology Presented to University of Kansas Emergency Medicine Residents – December 2010</p>

2010	<p>“Salicylate Toxicity” Presented to Truman Medical Center Emergency Medicine Residents – December 2010.</p>
2011	<p>“Headache and Vertigo” “Abdominal and Pelvic Pain” Lectures to rotating fourth year medical students at UCSD Emergency Medicine Residency.</p>
2011	<p>“Toxic Alcohols” Presented to UCSD Skaggs School of Pharmacy Students.</p>
2011	<p>“Introduction to Toxicology” “Calcium Channel Blocker Toxicity” “Tricyclic Antidepressant Toxicity” “Deconstructing Decontamination” “Synthetic Highs” “Poisonous Plants” Guest Lecture Series in Toxicology Presented to University of Kansas Emergency Medicine Residents – July 27, 2011.</p>
2011	<p>“Pediatric Toxicology Questions and Answers” “Synthetic Highs” Presented to KUMC Pediatric Residents – December 2011.</p>
2011	<p>“Urine Drug Screens” Presented to Truman Medical Center Emergency Medicine Residents – July 2011.</p>
2011	<p>“Pediatric Toxicology: Questions and Answers” Presented to UCSD-Rady’s Childrens Hospital Pediatric Residents – August 2011</p>
2011	<p>“Beta Blocker Toxicity” “Toxic Blood” “Sugar Free – Toxicity of Oral Hypoglycemics” “Natural Highs” Guest Lecture Series in Toxicology Presented to University of Kansas Emergency Medicine Residents – December 2011.</p>
2011	<p>“Marine Envenomations” Presented to Truman Medical Center Emergency</p>

Medicine Residents – December 2011

- 2012 “Toxic Alcohols”
Presented to Scripps Mercy Hospital Internal
Medicine Residency – January 2012
- 2012 “Toxic Alcohols”
Presented to UCSD-Rady’s Childrens Hospital
Pediatric Residents – January 2012
- 2012 “Antimuscarinic Toxicity and Physostigmine”
Presented to UCSD-Rady’s Childrens Hospital
Pediatric Residents – March 2012
- 2012 “Low Dose Poisons”
Presented to U of Kansas Pediatric Residency
08/2012
- 2012 “Common Poisonings”
Presented to U of Kansas Family Medicine
Residency 10/2012
- 2012 “Dyshemoglobins”
Presented to U of Kansas Emergency Medicine
Residents 10/17/2012
- 2012 “Antidepressants – Toxicity of Non-TCAs”
Presented to U of Kansas Emergency Medicine
Residents 10/17/2012
- 2012 “Management of Alcohol Withdrawal”
Presented to U of Kansas Emergency Medicine
Residents 10/24/2012
- 2012 “Biological Weapons”
Presented at Emergency Medicine Grand Rounds
11/07/012
- 2012 “Chemicals Complicating Trauma”
Presented at U of Kansas Hospital/Trauma Grand
Rounds 12/12/2012
- 2012 “Toxic Blood: Toxicology of Anticoagulants”
Presented to U of Kansas Emergency Medicine
Residency 12/12/2012
- 2012 “Chemical Weapons”
Presented to U of Kansas Emergency Medicine

Residency 12/19/2012

- 2012 “Synthetic Highs”
Presented at The Regional Prevention Center:
Synthetic Drugs – The New Counterculture Event
12/03/2012
- 2013 “Radiation”
Presented to U of Kansas Emergency Medicine
Residency 02/06/2013
- 2013 “Occupational Exposures with Emergency Room Results”
Presented at 35th Annual Carroll P. Hungate
Postgraduate Seminar on Occupational and
Environmental Health – 02/22/2013
- 2013 “The Devil You Don’t Know: Toxicology of
Designer Drugs”
Presented at Quintiles Grand
Rounds-03/20/2013
- 2013 “Toxic Trauma: Chemicals Complicating
Trauma”
Presented at Midwest Trauma Society Conference
05/02/2013
- 2013 “Cocaine and Amphetamines: The Toxicology of ‘Uppers’”
Presented to U of Kansas Emergency Medicine
Residents 04/17/2013
- 2013 “The Art of the Bite: Management of Snake Bites”
Presented at U of Kansas Hospital Trauma Grand
Rounds 05/08/2013
- 2013 “The Devil You Don’t Know: Toxicology
of Designer Drugs”
Presented to U of Kansas Family Medicine
Residents. 05/22/2013
- 2013 “Pharming: Misuse/Abuse of OTC Drugs”.
Presented to U of Kansas Pediatric
Residents
05/30/2013
- 2013 “All Hot and Bothered” – Serotonin
Toxicity, NMS, and Malignant Hyperthermia.
Presented to Pulmonary- Critical
Care Department

06/11/2013

- 2013 “Pediatric Toxicology: Questions and
Answers”
Presented to U of Kansas Pediatric Residents
08/27/2013
- 2013 “Toxicity of LiFe” – Iron and Lithium
Toxicity
Presented to U of Kansas Emergency Medicine
Residents 09/14/2013
- 2013 “Anticonvulsant Toxicity”
Presented to U of Kansas Emergency Medicine
Residents 09/21/2013
- 2013 “Designer Drugs: The Devil You Don’t Know”
Presented to Department of Pathology and
Laboratory Medicine at Children’s Mercy Hospital
Lab CE on 11/14/2013.
- 2013 “Killing Time: Pesticides in the ED”
Presented to U of Kansas Emergency Medicine
Residents 11/20/2013
- 2013 “Good Golly, Miss Molly: The Challenge
of Designer Drugs.”
Presented to Life Star CE meeting
12/3/2013.
- 2014 “New Drugs on the Streets”
Presented to Miami County EMS
01/28/2014
- 2014 “The Old and New Mickey Finn – Drug
Facilitated Sexual Assault”
Presented to University of Kansas Hospital SANE
program 2/12/2014
- 2014 “Poison Control Centers and Public Health
Departments: The Past and Future”
Presented at Kansas Public Health Grand Rounds
02/19/2014
- 2014 “What the Frack – Toxicology of Hydraulic Fracturing.”
Presented at 36th Annual Carroll P. Hungate
Postgraduate Seminar on Occupational and
Environmental Health – 02/21/2014

2014	<p>“The Devil You Don’t Know. The Rise of Novel Psychoactive Substances.” Presented to U of Kansas Psychiatry Residents. 2/25/2014</p>
2014	<p>“Useful or Useless? The Limitations of the Urine Drug Screen.” Presented to U of Kansas Psychiatry Residents 3/4/2014</p>
2014	<p>“Legal Highs and Designer Drugs: The Devil You Don’t Know” Presented at Paul Laybourne Symposium on Child Psychiatry 4/25/2014</p>
2014	<p>“GCS 14F: Sympathomimetic Toxicity” Presented to U of Kansas Hospital Emergency Medicine Residents 04/30/2014</p>
2014	<p>“Brown Recluse Bites” Presented at U of Kansas Pediatrics Grand Rounds 5/7/2014</p>
2014	<p>“The UDS and the Injured Patient: Limitations and Utility” Presented at U of Kansas Hospital Trauma Grand Rounds. 5/14/2014</p>
2014	<p>“Pediatric Toxicology – Some Questions and (Hopefully) Some Answers.” Presented to U of Kansas Department of Pediatrics Residents. 7/31/2014</p>
2014	<p>“What’s that Smell? Toxic Gases in the Prehospital Setting” Presented at KEMSA Annual Conference 08/17/2014</p>
2014	<p>Metabolic Antidotes Presented to U of Kansas Hospital Emergency Department Nursing Staff 08/26/2014</p>
2014	<p>“Too Low and Too Slow” Calcium Channel Antagonists Presented to U of Kansas Hospital Emergency Medicine Residents. 08/27/2014</p>

2014	<p>“Legal Highs and Designer Drugs: The Devil You Don’t Know”</p> <p>Presented to Community Memorial Hospital Medical Staff, Marysville, KS</p> <p>09-19-2014</p>
2014	<p>“Legal Highs and Designer Drugs: The Devil You Don’t Know”</p> <p>Presented at What's New in Pediatric Emergency and Urgent Care Medicine 11-01-2014</p>
2014	<p>“Legal Highs and Designer Drugs: The Devil You Don’t Know”</p> <p>Presented to Olathe Fire Dept Annual CME Course</p> <p>11-07-2014</p>
2014	<p>“The Art of the Bite: Snake and Spider Bites”</p> <p>Presented to Olathe Fire Dept Annual CME Course</p> <p>11-07-2014</p>
2014	<p>“The Devil You Don’t Know. Novel Psychoactive Substances.”</p> <p>Presented to U of Kansas Dept of Psychiatry Grand Rounds</p> <p>12/06/2014</p>
2015	<p>“Toxicology in the Prehospital Setting”</p> <p>Presented to Miami County EMS</p> <p>01/06/2015</p>
2015	<p>“Snake and Spider Bites”</p> <p>Presented to Miami County EMS</p> <p>01/06/2015</p>
2015	<p>“Legal Highs”</p> <p>Presented to Miami County EMS</p> <p>01/06/2015</p>
2015	<p>“Opioids and Opioid Withdrawal”</p> <p>Presented to U of Kansas Hospital Emergency Medicine Residents</p> <p>01/21/2015</p>
2015	<p>“Tricyclic and Antidepressant Toxicology”</p> <p>Presented to U of Kansas Hospital Emergency Medicine Residents</p> <p>01/21/2015</p>

2015	<p>“A-Z: Toxicology for the EM Boards” Presented to U of Kansas Hosp Emergency Medicine Residency 02/04/2015</p>
2015	<p>“The Devil You Don’t Know” Presented to U of Kansas FP Residency 2/25/2015</p>
2015	<p>“Carbon Monoxide and HBO” Presented to U of Kansas Pediatrics Grand Rounds 02/27/2015</p>
2015	<p>“Toxicology 101” Presented to U of Kansas Family Medicine Residents 04/01/2015</p>
2015	<p>“Salts and Spice and Everything (Not) Nice. Toxicology of Designer Drugs” Presented to University of Kansas Hospital Critical Care Division Nursing Update CME 04/28/2015, 05/12/2015</p>
2015	<p>“GCS 14F: Toxicity of Sympathomimetics” Presented to U of Kansas Hosp Emergency Medicine Residency. 04/29/2015</p>
2015	<p>“Art of the Bite: Managing Venomous Snake Bites” Presented at Midwest Trauma Society Annual Conference 05/13/2015</p>
2015	<p>“All Hot and Bothered: Hot Toxidromes” Presented to U of Kansas Hosp Emergency Medicine Residency 5/20/2015</p>
2015	<p>“Toxic Blood” Presented to U of Kansas Hosp Emergency Medicine Residency 5/27/2015</p>
2015	<p>“Art of the Bite: Management of Venomous Snake Bites” Presented at KEMSA Annual Conference</p>

08/16/2015

- 2015 “Art of the Bite: Management of Venomous Snake Bites”
Presented at Life Star of Kansas Emergency Care
Symposium.
10/01/2015
- 2015 Moderator “AAPCC Symposium”
NACCT 2015, 10/11/2015
- 2015 “The Devil You Don’t Know: Emerging Drugs of Abuse”
Presented at KUMC EMS Symposium
10/24/2015
- 2015 “Art of the Bite: Management of Venomous Snake Bites”
Presented at KUMC ED Trauma Education Day
12/9/2015
- 2016 “Management of the Poisoned Patient in the
Prehospital Setting”
Presented to Miami County EMS
2/9/2016
- 2016 “The Art of the Bite: Managing Snake Bites
in the Prehospital Setting”
Presented to Miami County EMS
2/9/2016
- 2016 “The New Mickey Finn: DFSA Old and
New”
Presented to Sexual Assault Nurse Examiner Course
KUMC
2/9/2016
- 2016 “A-Z: Tox for the Boards”
Presented to U of Kansas Hosp Emergency
Medicine Residency
2/17/2016
- 2016 “Medical Clearance of the Pediatric
Intentional Overdose in the ED”
Presented to The University of Kansas Hospital -
Marillac Campus Staff
2/26/2016
- 2016 “Hot Toxidromes”
Presented to KUMC Psychiatry
Residents

		3/8/2016
2016	“They Drank What? Toxicology of Caustics” Presented to U of Kansas Hosp Emergency Medicine Residency 3/23/2016	
2016	“Tox 101” Presented at KUMC Critical Care Boot Camp 4/7/2016	
2016	“The New Mickey Finn: DFSA Old and New” Presented to Sexual Assault Nurse Research-Brookside 4/7/2016	
2016	“How High is too High? High Dose Insulin” Presented to Life Star CME 4/12/2016	
2016	“Hair of the Dog: Drug Withdrawal in the ICU.” Presented to KUMC Critical Care Update 5/12/2016	
2016	“A Test’s Got To Know Its Limitations: Utility and Limitation of the Urine Drug Screen.” Presented to Children’s Mercy Hospital SCAN Team 5/26/2016	
2016	“Lipid Love: Use of Intravenous Lipid Emulsion in the Poisoned Patient” Presented to KUMC Critical Care Division 5/31/2016	
2016	“Art of the Bite: Managing Venomous Snake Bites” Presented to U of Kansas Hospital Emergency Medicine Residency 6/15/2016	
2016	“The New Mickey Finn: DFSA Old and	

	New”	Presented to Sexual Assault Nurse Examiner Course St Lukes Kansas City 8/11/2016
2016	“Narcan Strikes Back” Presented at KEMSA Annual Conference Wichita, KS 08/13/2016	
2016	“Too Low and Too Slow: The Poisoned Heart” Presented to U of Kansas Hospital Emergency Medicine Residency 9/21/2016	
2016	“What is that Rash From? Occupational Skin Disorders” Presented at 42nd Annual State of Kansas Workers Compensation Seminar. 9/27/2016	
2016	”Acute Methamphetamine Intoxication and It’s Treatment” Presented at Sedan Urgent Care Conference 10/7/2016	
2016	“They Took What?! The Challenge and Toxicity of New and Emerging Drugs of Abuse” Presented at KUMC Trends in Trauma Education Day 11/21/2016	
2016	“Tweaking in the 21 st Century! Meth, Bath Salts, and Beyond.” Presented at Mosaic Life Care Grand Rounds, St. Joseph MO. 12/6/2016	
2017	“What’s the Vape About?” Presented at Kansas City Southwest Clinical Society Winter Conference, Overland Park, KS 2/10/2017	
2017	“When the Bite is Worse Than The Bark: Bites From Snakes, Dogs, and Rabid Animals...”	

2017	<p>“Bites and Stings” Presented to Murphy Academic Society 4/13/2017</p>
2017	<p>“Chemical Weapons” Presented to U of Kansas Hospital Emergency Medicine Residency 4/26/2017</p>
2017	<p>“Novel Highs. What Kids Are Using in 2017?” Presented at Presented at Paul Laybourne Symposium on Child Psychiatry 5/5/2017</p>
2017	<p>“The Devil You Didn't Know: The Rise of Novel Psychoactive Substances.” Presented at KUMC Grand Rounds 5/18/2017</p>
2017	<p>“They Drank What? Caustic Ingestions” Presented to U of Kansas Hospital Emergency Medicine Residency 5/31/2017</p>
2017	<p>Introduction to Toxicology Presented to University of Kansas School of Medicine Students on Pediatric Clerkship. Recurring</p>
2017	<p>“Living in the Fast Lane” Presented to 2017 Cardiac Nursing Symposium University of Kansas Hospital 9-7-2017</p>
2017	<p>“Novel Highs” Presented to Univeristy of Kansas Hospital Pharmacists 9-28-2017</p>
2017	<p>“Drug Screens: Utility and Limitations” Presented at Greater Kansas City Chapter for American Society for Pain Management Nursing,</p>

Fall 2017 Conference.
10-21-2017

2017 “The Toxic Heart: Tricyclic Antidepressants
and Other Sodium Channel Blockers”
Presented to KUMC Pulmonary/Critical Care
Division.
11-7-2017

2018 “Sodium Channel Blockers”
Presented to U of Kansas Hospital Emergency
Medicine Residency
01/24/2018

2018 “Hot Toxidromes”
Presented to KUMC Psychiatry
Residents
3/27/2018

2018 “The Devil We Don’t Know: Toxicity of
Novel Psychoactive Substances”
Presented to VISIONS Symposium
Olathe, KS
03/2/2018

2018 “Viper 2018: Old and New in Venomous Snake Bite Management”
Presented to Midwest Trauma Society
Independence, MO
5/04/2018

2018 “The Elephant (Tranquilizer) In The Room:
Threat of Fentanyl and its Analogs”
Presented to Kansas Council of Health-System
Pharmacists/Missouri Society of Health-System
Pharmacists Spring Meeting 2018\
Olathe, KS
5/04/2018

2018 “Viper 2018: Old and New in Venomous Snake Bite Management”
Presented at 2018 Missouri EMS Conference and Expo
Branson, MO
7/27/2018

2018 ““The Elephant (Tranquilizer) In The Room:

	Threat of Fentanyl and its Analogs” Presented at Presented at KEMSA Annual Conference Wichita, KS 08/11/2018
2018	“New Trends in Substance Abuse” Presented at KC SouthWest Clinical Society Fall Conference- Mental Health Section Overland Park, KS 10/05/2018
2019	“Fear of Flumazenil” Presented at Emergencies In Medicine CME Conference Park City, UT 2/26/2019
2019	“B9-052 27 year old female with Agitation.” Presented to ACED 805, University of Kansas SOM 210 Medical Students Kansas City, KS 3/19/2019
2019	“Drug Facilitated Sexual Assault” Presented at SANE Training Course Kansas City, KS 3/20/2019

COMMITTEE PARTICIPATION

2008-2010	Cerebrovascular PI Committee
2012-Present	P&T Committee Chair 2015 - Present Vice-Chair 2014-2015
2012-2015	Emergency Medicine Residency Education Committee
2013-Present	Associate Research Director, Department of Emergency Medicine
2013-2015	Emergency Medicine/Pediatric Liaison
2013-2016	Pediatric Trauma Committee
2013-2017	Pediatric Critical Care Committee
2016-Present	ACMT Membership Committee
2017-Present	Physician Committee Member, Johnson County EMS

PROFESSIONAL ACTIVITIES

2001-2010	United States Air Force Reserve, Major – Honorable Discharge.
-----------	---

2003-2004	Instructor Park-Medic Training Program University Medical Center 445 S. Cedar, Fresno CA 93702 559-459-5105
08/2004-02/2005	Staff Physician (Per Diem) Oakhurst Community Medical Center 48677 Victoria Lane, Oakhurst, CA 93644 559-683-2244
08/2004-1/2005	Game Day Physician Fresno Falcons (Minor League Hockey Team)
03/2005-07/2005	Emergency Physician (Per Diem) Tulare District Hospital 869 Cherry St, Tulare, CA 93274 559-688-0821
08/2005-01/07	Staff Physician Emergency Department St. Luke's Hospital 4401 Wornall Rd, Kansas City, MO 64111 816-932-8211
08/2005-03/2006	Staff Physician Emergency Department St. Luke's North Hospital 5830 NW Barry Rd, Kansas City, MO 64151 816-891-6010
03/2006-07/2008	Staff Physician Emergency Department St. John's Hospital 3500 S. 4 th St, Leavenworth, KS 66408 913-680-6000
07/2006-7/2012S	Attending, (Volunteer Clinical Instructor) Truman Medical Center 2301 Holmes St Kansas City, MO 64108 816-404-1000
07/2006-06/2010	Attending, (Assistant Professor) University of Kansas Hospital 3901 Rainbow Blvd Kansas City, KS 66160 913-588-6500
10/2006-05/2008	Attending, (UCSF School of Medicine Clinical Instructor)

	UCSF-Fresno Emergency Medicine Residency Program 155 North Fresno Street Fresno, CA 93701 559-499-6440
03/2008-07/2008	Staff Physician Emergency Department Providence Medical Center 8929 Parallel Parkway, Kansas City, KS 66112 913-596-4000
07/2010 – 07/2012	Attending, (UCSD School of Medicine Clinical Instructor) UCSD Emergency Medicine Residency Program 200 W Arbor Dr, #8895 San Diego, CA 92103 619-543-6222
08/2012 – Present	Attending (Associate Clinical Professor) University of Kansas Hospital Emergency Medicine Medical Toxicology 3901 Rainbow Blvd Kansas City, KS 66160 913-588-6500
08/2012- Present	Medical Director University of Kansas Health System Poison Control Center 3901 Rainbow Blvd., 4045 Delp Kansas City, KS 66160 913-588-0152
10/2012-Present	Staff Medical Toxicologist Children's Mercy Hospital 2401 Gillham Rd Kansas City, MO 64108 (816) 234-3000
08/2016-Present	Backup Competent Medical Authority MRIGlobal Kansas City, MO (816) 753-7600
10/2018 – Present	Staff Physician Emergency Department Kansas City VA 4801 Linwood Blvd, Kansas City, MO 64128 (816) 861-4700

PROFESSIONAL MEMBERSHIPS

American College of Emergency Physicians - Fellow
American College of Medical Toxicology
American Academy of Clinical Toxicology

AREAS OF PROFESSIONAL INTEREST

Toxicology
Ultrasound
Hyperbaric Medicine

Stephen Thornton, M.D.

**Board Certified Medical Toxicology
Board Certified Emergency Medicine**

Fee Schedule

- I. \$450/hour to review and discuss pertinent medical records, perform medical literature search and produce any written opinions with a 4 hour minimum retainer.
- II. \$600/hour to give deposition with 3 hours minimum plus time and travel.
 - Require 1 month notice to schedule time for deposition or testifying.
 - Cancellation fee of \$1000 if cancellation within 7 days of scheduled time.
- III. \$6000 for courtroom testimony plus time and travel.
 - Require 1 month notice to schedule time for deposition or testifying.
 - Cancellation fee of \$1000 if cancellation within 7 days of scheduled time.
- IV. \$75/hour all for time and travel

➤ Please note all hours are rounded up to nearest whole hour.

Exhibit B

In The Matter Of:

**Cutler
v.
Pima County**

Transcript of:

STEPHEN LOUIS THORNTON, M.D.

February 21, 2020

Colville & Dippel
LLC

1309 E Broadway Blvd
Tucson, AZ 85719

O 520.884.9041

F 520.623.1681

ArizonaDepos.com

1 he was retained, yes.

2 Q. All right. And then are you also
3 giving standard of care opinions in this case as to
4 Grant Reed, the paramedic Grant Reed, and the EMT
5 Vince?

6 A. So as a board certified emergency
7 medicine physician, part of my training is in EMS
8 services. That's why EMS is now a subspecialty of
9 emergency medicine.

10 So as an emergency medicine resident, I
11 did a rotation through EMS. I rode with EMS.
12 There are EMS questions on our board certification
13 test. So in that sense, I believe that I can speak
14 to the standard of care of an emergency medical
15 service in regards to the practice of emergency
16 medicine.

17 Q. Okay. But let me make sure I
18 understand your background. As I understand it,
19 you went to, what, the University of Kansas,
20 correct, for your undergraduate work?

21 A. Kansas State University for my
22 undergraduate work.

23 Q. Sorry. Kansas State.

24 A. There's a big difference.

25 Q. All right. And then you went to --

1 then you went directly into medical school; is that
2 correct?

3 A. I did. University of Kansas School of
4 Medicine.

5 Q. Okay. And then after that, you did, I
6 believe, a fellowship in the San Francisco area; is
7 that correct?

8 A. I did a four-year emergency medicine
9 residency at the University of California
10 San Francisco - Fresno.

11 Q. And then at one point you did a
12 fellowship over in the San Diego area, correct?

13 A. I did a two-year medical toxicology
14 fellowship in San Diego, yes.

15 Q. Were you ever an emergency medical
16 technician, an EMT?

17 A. No.

18 Q. Do you have any certifications as an
19 EMT?

20 A. No.

21 Q. All right. Were you ever -- did you
22 ever work as a paramedic?

23 A. I rode on the ambulance as a resident,
24 so technically we could do the same things
25 paramedics do, but I've never been trained as a

1 paramedic, if that's your question.

2 Q. And you're not certified as a
3 paramedic, correct?

4 A. I've never sat for any certification
5 for being a paramedic.

6 Q. When you said you rode in the ambulance
7 as a resident, when would that have been?

8 A. That would have been -- would have been
9 between 2001 and 2005. We have a month of
10 emergency medicine -- or EMS because I did the EMS
11 month. And as part of that, there's several
12 ride-alongs that you go on with the ambulances.

13 Q. Other than those rides, have you ever
14 been out on a ride with EMS or a paramedic in an
15 ambulance setting?

16 A. As a medical student, I worked at the
17 Philmont Boy Scout Ranch, which is kind of a
18 wilderness medicine setting, and we were basically
19 part of the first responders for that -- that camp.

20 I remember as a medical student running
21 up a mountain with a backpack with oxygen for a
22 gentleman that was having a heart attack on the top
23 of a mountain that got evacuated by a helicopter.
24 It's something I remember very vividly. So in that
25 sense, I was a medical student but I was performing

1 the duties of a prehospital provider.

2 Q. Okay. And when would that have
3 occurred?

4 A. That would have been 2 -- the summer of
5 2000.

6 Q. Other than that, any other experience
7 out in the field with EMS services, meaning like in
8 an ambulance, paramedic or EMT?

9 A. Not that I can recall.

10 Q. All right. I noted in your report that
11 you reviewed approved protocols, including those on
12 the management of excited delirium; is that
13 correct?

14 A. That's correct.

15 Q. Is that something you do for the
16 University of Kansas health system?

17 A. No. I am one of the physician members
18 on the Johnson County Board of EMS that takes the
19 recommendations from the medical director for the
20 EMS service and just basically makes sure that
21 everything seems okay. You know, we weren't the
22 voting body.

23 Q. So are you then the one that actually
24 puts together an administrative order? Do you know
25 what I'm talking when I say administrative order?

1 degree as a medical toxicologist. One is to -- as
2 an agent for procedural sedation, for instance,
3 when we have to reduce a fracture. And then the
4 other is for control of agitated patients.

5 Q. Okay. Then I notice here, it says also
6 that you're an associate professor and core faculty
7 member for University of Kansas Emergency Medicine
8 Residency, correct?

9 A. That is correct.

10 Q. All right. Is that for medical
11 students?

12 A. Actually, it's for medical residents,
13 so they've already finished medical school. This is
14 a postgraduate training.

15 Q. Oh, that's another residency?

16 A. It is a residency, yes. It's an
17 emergency medicine residency at the University of
18 Kansas Hospital.

19 Q. Okay. Got it. I did want to ask you
20 on page 6 of your report, there's an article
21 referenced there that you were a coauthor of, and
22 the title is "Massive Iatrogenic" --

23 A. Iatrogenic.

24 Q. -- "Iatrogenic Pediatric Ketamine
25 Overdose with Serial Levels and Minimal Morbidity."

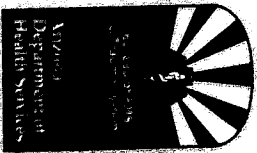

Exhibit C

ENTERED
2-14-15ms

Certified EMCT - Paramedic
Arizona Department of Health Services
Bureau of Emergency Medical Services & Trauma System

Issued: 02/12/2015
Expires: 03/14/2017
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Certified EMCT - Paramedic

Arizona Department of Health Services
Bureau of Emergency Medical Services & Trauma System

Paramedic



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